

Kinetic Energy (KE) and Potential Energy (PE) test

Assume gravitational attraction, g to be 10m/s^2

1. Calculate the K.E. of a 2 kg trolley travelling at 4m/s.
2. A trolley, 2 kg, is carrying bars of gold. Each bar weighs 500g and there are 500 bars. Calculate the K.E. of the trolley, which is travelling at 50cm/s.
3. What is the velocity of an object of mass 1kg, which has 200J of K.E.?
4. Calculate the P.E. of a 5kg mass when it is 6m above the ground.
5. It is estimated that $7 \times 10^6\text{kg}$ of water pours over the Niagara Falls (height of 51m) every second.
 - A) If all the energy of the falling water could be harnessed, what energy would be available for electricity?
 - B) If all the energy of the falling water could be harnessed, what power would be available for electricity?
 - C) If 70% of the energy of the falling water could be harnessed, calculate the **energy** and **power** available for electricity.
6. A student wrote: A 500kg car travelling at 10 m/s has twice the kinetic energy of a 500 kg car travelling at 5m/s.
Use 'kinetic energy = $\frac{1}{2}mv^2$ ' to investigate if the claim above is true or false.